

REMARKS

Claims 1-37 are presented for further examination. Claims 1 and 9 have been amended. Claims 18-37 are new. The Abstract has been amended to conform with the requirements of the Manual of Patent Examining Procedure, and no new matter has been added.

In the Office Action mailed March 31, 2004, the Examiner rejected claims 1-17 as anticipated by U.S. Patent No. 4,400,659 ("Barron et al."). Applicant respectfully disagrees with the basis for the rejection and requests reconsideration and further examination of the claims.

Discussion of the Present Invention

The following discussion is for purposes of illustration only in order to help the Examiner better distinguish the present invention from the cited references, and it is not intended to limit the claims, which will be discussed in greater detail hereinbelow.

The disclosed embodiments of the present invention are designed to compensate for the reactive power in an electrical network, and in particular at the consumer of electrical power on the network, in a simple and expedient fashion. According to the disclosed embodiments of the invention, a compensation device that is coupled between an electric generator and the network such that electrical power delivered to the consumer is provided with a reactive power component adapted in its phase or amplitude or both and in respect of its underlying frequency to the consumer to compensate for the reactive power from consumer demand. Thus, not only phase and amplitude, but also frequency of the electrical power are influenced. Further, reactive power at the consumer is evaluated in order to regulate the compensation device. This is clearly illustrated in Figures 9 and 10 of the specification.

It is important to understand that the present invention has the advantage that harmonics are provided by the regulation of the compensation device, as defined in claim 1. These harmonics are required by a number of consumers, such as televisions and energy saving lamps, which require a current comprising harmonic, *i.e.*, a harmonic reactive power (see specification, page 2, lines 18-29; page 5, line 30-page 6, line 10). Thus, current having a frequency that is a multiple of the frequency of the electrical network for the consumer is required to compensate harmonic reactive power of electrical consumers in the electrical

network. This reduces or completely avoids the negative influences on the quality of the voltage in the electrical network.

Discussion of the Cited Reference

Barron et al., U.S. Patent No. 4,400,659, is directed to a method and apparatus for maximizing and stabilizing electrical power derived from a wind driven source. More particularly, Barron et al. teach a generator system that will simultaneously provide constant frequency and phase control, even when operating with variable speed wind turbulence. In the portion cited by the Examiner, known elements of a power regulation system in an electrical network are described. Barron et al. teach a differential frequency converter for control of the frequency of the AC power signal. Furthermore, power sensing circuits 42, 44 are described by Barron et al. for generating DC signals that are proportional to the real power or, respectively, reactive power flowing out of the generator. Also, a reactive power set is disclosed next to a setting circuit 59. However, this is a fixed setting and has nothing to do with compensation of reactive power at the consumer. Also, the “cycle converter” mentioned in claim 3, lines 35-46, only adapts the generator frequency to be in correspondence with the desired output frequency, *i.e.*, the frequency of the power supply net.

Barron et al. do not teach or suggest methods and apparatus for addressing the problems that are overcome by the present invention, *i.e.*, compensating for the reactive power in the consumer in an electrical network. One of ordinary skill would not look to Barron et al. for any teachings in this regard. Moreover, the present invention is not taught or described in Barron et al. There is no mention of compensation of reactive power. Furthermore, there is no mention of the compensation for the reactive power at the consumer. Still further, there is no teaching or suggestion of adaption of the reactive power component in respect of its phase or amplitude, or both, and its frequency to the consumer.

Discussion of the Claims

Claim 1 is directed to a method of reactive power regulation in an electrical network that includes producing electrical power by an electrical generator driven by the rotor of a wind power installation and modulating the power by means of a compensation device between

the generator and the network for the compensation of reactive power by adaption of the phase and/or amplitude of the reactive power component of the delivered electrical power, regulating the compensation device so that the electrical power delivered to the consumer has a reactive component that is adapted in respect to its phase and/or amplitude, and in respect of its frequency to the consumer to compensate for the reactive power in the consumer. As discussed above, Barron et al. do not teach or suggest a compensation device configured to adapt the phase or amplitude, or both, of the reactive power component of delivered electrical power and regulating the compensation device so that the electrical power delivered to the consumer has a reactive power component that is adapted in its frequency to the consumer to compensate for the reactive power in the consumer. Rather, Barron et al. teach providing a setting circuit 59 that provides a fixed setting for reactive power and does not teach or suggest compensation of reactive power in response to consumer demand. In addition, the cycle converter of Barron et al. only adapts the generated frequency to be in correspondence with the frequency of the power supply net. Nowhere do Barron et al. teach or suggest adapting the frequency in response to consumer demand.

In view of the foregoing, applicant submits that claim 1 as well as dependent claims 2-8 are clearly in condition for allowance.

Independent claim 9 is directed to an apparatus for producing electrical energy in an electrical network that includes an electrical generator; a compensation device between the generator and the network, the compensation device adapted to compensate for the reactive power by adaption of the phase and/or amplitude of the reactive power component of the delivered electrical power; and a regulating device configured to regulate the compensation device in such a way that the electrical power delivered to the consumer has a reactive power component that is adapted in respect of its phase and/or amplitude and in respect of its frequency to the consumer to compensate for the reactive power in the consumer. As discussed above with respect to claim 1, Barron et al. do not teach or suggest the combination recited in claim 9, *i.e.*, a compensation device and regulating device that compensates for the reactive power by adapting the phase or the amplitude or both of the reactive power component and adapting the frequency to the consumer to compensate for the reactive power resulting from consumer demand. In view

of the foregoing, applicant respectfully submits claim 9 as well as dependent claims 10-17 are allowable.

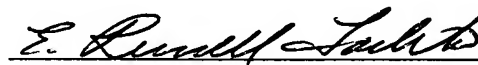
Independent claims 18 and 19 are directed to methods of reactive power regulation that include the limitations discussed above with respect to claim 1. More particularly, claim 18 is essentially a combination of claims 1 and 5, and it corresponds to apparatus claim 27. Method claim 19 corresponds to a combination of present claims 1 and 6 as well as to apparatus claim 28. Applicant respectfully submits claims 18-37 are allowable for the reasons why claims 1-17 are allowable.

In the event the Examiner finds minor informalities that can be resolved by telephone conference, the Examiner is urged to contact applicant's undersigned representative by telephone at (206) 622-4900 in order to expeditiously resolve prosecution of this application. Consequently, early and favorable action allowing these claims and passing this case to issuance is respectfully solicited.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,

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